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EXAMINER
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YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 06/18/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/073,012

Applicant(s)

KAMATANI ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02/12/02, 03/13/02, 05/08/02 & 03/31/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) 3-6, 16-20, 22 and 37-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 7-15, 21, 23-36 and 41-47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-47 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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1. This application contains claims directed to the following patentably distinct species of the claimed invention:

(a) a metal coordination compound of formula (3) and a device comprising the compound wherein

M is one of Ir, Pt, Rh or Pd; and

m is one of 1, 2 or 3; and

n is one of 0, 1 or 2; and

for partial structure  $ML_m$ , which is represented by formula (2), A is one of Ph to Cz as shown on page 39 of the specification and B is one of Iq2 to Iq10 as shown on page 39 of the specification; and

partial structure  $ML'_n$  (if n is 1 or 2) is one of formula (4), (5) or (6) wherein A' of formula (4) is one of Ph-Cz as shown on page 39 of the specification, and B' of formula (4) or B'' of formula (6) is one of Iq2-Sz as shown on page 39 of the specification; or

(b) a metal coordination compound of formula (7) and a device comprising the compound wherein

M' is one of Ir or Rh; and

for partial structure  $M'L'_m$ , which is represented by formula (2), A is one of Ph to Cz as shown on page 39 of the specification and B is one of Iq2 to Iq10 as shown on page 39 of the specification.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally

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held to be allowable. In addition, applicant is required to select an ultimate species to be used as the starting point for search and examination purposes. Currently, claims 1, 41 and 45-47 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. During a telephone conversation with Jason Okun on May 23, 2003, a provisional election was made with traverse to prosecute the species in which the metal coordination compound is a compound of formula (3) in which M is Ir, m is 3, n is 0, A of partial structure

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MLm is Ph and B is Iq2. Claims 1, 2, 7-15, 21, 23-36 and 41-47 read on the elected species.

(Claims 12-14 are considered to read on the elected species because while these claims further define B' and B", they do not require the compound to contain a partial structure ML'n.)

Compound 7 was selected as the ultimate species. Affirmation of this election must be made by applicant in replying to this Office action. Claims 3-6, 16-20, 22 and 37-40 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to non-elected species.

(While some prior art is applied in the present action to non-elected species, this action should not be taken as an examination on the merits of all species encompassed by the claims.)

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

4. The disclosure is objected to because of the following informalities:

The scope of a "1-(3,4,5,6-tetrafluoromethyl)phenyl group" (recited, e.g., at p. 16, l. 25-26), a "3,4,5,6,7,8-hexafluoro group" (recited, e.g., at p. 17, l. 1), and a "4-trifluorooxyphenyl group" (recited, e.g. at p. 17, l. 14-15) is not clear.

Appropriate correction is required.

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5. Claims 23-35 and 41-47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear what is meant by a “non-adjacent methylene group” as recited in claim 23. What is the methylene group “non-adjacent” to?

It is not clear what a “1-(3,4,5,6-tetrafluoromethyl)phenyl group” is as required by claim 32. A methyl group does not have positions identifiable as 3, 4, 5 or 6, and a methyl group cannot be substituted by four fluorine atoms and at the same time be bonded to a phenyl group.

It is not clear what is meant by a “3,4,5,6,7,8-hexafluoro group” as required by claim 32. It is not clear if this requires six hydrogen atoms of the isoquinolyl group to be substituted by fluorine atoms, or if the six fluorine atoms are part of an unspecified substituent on the isoquinolyl group.

It is not clear what is meant by a “4-trifluorooxyphenyl group” as required by claim 35. It is not clear how three fluorine atoms can be bonded to a phenyl group via an oxygen.

In requiring the device of claim 41 and dependents to comprise a metal coordination compound having at least one partial structure represented by the formula (1) in Claim 1, it is not clear if the device must comprise the compound of claim 1 (which, in addition to having the partial structure represented by formula (1), is red-luminescent) or if it is sufficient for the device to comprise any compound having the partial structure. (If the latter, then claim 41 should be rewritten as an independent claim since it does not include all the limitations of the claim from which it depends.)

Claim 42: There is no antecedent basis for a structure represented by the formula (3) as dependent from claim 41 which depends from claim 1.

Claim 43: There is no antecedent basis for a structure represented by the formula (8) as dependent from claim 41 which depends from claim 1.

Claim 44: There is no antecedent basis for a structure represented by the formula (9) as dependent from claim 41 which depends from claim 1.

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 7-15, 21, 36, 41, 42 and 44-47 are rejected under 35 U.S.C. 102(e) as being anticipated by Igarashi et al. (US 2001/0019782 A1).

Igarashi et al. disclose metal coordination compounds having a partial structure represented by present formula (1) which is further represented by present formula (2) in which M is iridium. Igarashi et al. disclose these iridium compounds for use as light emitting materials in organic electroluminescent devices (e.g. see paragraph [0002]).

Igarashi's compounds of formulae (1-53), (1-55), (1-56), (1-57), (1-59), (1-60) and (1-69) are compounds having a partial structure represented by present formula (1) which is further

represented by present formula (2) which is further represented by present formula (3) in which M is iridium.

Igarashi's compounds of formulae (1-53), (1-55), (1-57) and (1-69) are compounds represented by present formula (3) in which M is iridium, m is 2, n is 1 and the partial structure ML'n is represented by present formula (5). The compounds of formulae (1-53) and (1-55) contain A groups as further defined by claims 8, 9 and 15, and B groups as further defined by claims 12, 13 and 15. The compound of formula (1-57) contains B groups as further defined by claims 12, 13 and 15. The compound of formula (1-69) contains A groups as further defined by claims 8-11 and 15, and B groups as further defined by claims 12, 13 and 15.

Igarashi's compounds of formulae (1-56) and (1-59) are compounds represented by present formula (3) in which M is iridium, m is 2, n is 1 and the partial structure ML'n is represented by present formula (4). The compound of formula (1-56) contains A and A' groups as further defined by claims 8-11 and 15, and B and B' groups as further defined by claims 12, 13 and 15. The compound of formula (1-59) contains A and A' groups as further defined by claims 8, 9 and 15 (and A' groups as further defined by claims 10 and 11), and B and B' groups as further defined by claims 12, 13 and 15.

Igarashi's compound of formula (1-60) is a compound represented by present formula (3) in which M is iridium, m is 3 and n is 0. This compound contains A groups as further defined by claims 8, 9 and 15, and B groups as further defined by claims 12, 13 and 15.

Of Igarashi's compounds referenced above, at least the compound of formula (1-56), which is the same as compound 31 disclosed in the present specification, is red-luminescent as



required by the present compound claims (and possibly by the present device/apparatus claims). See Igarashi's Example 27 (paragraph [0185]). Although Igarashi's compounds are not limited to red-luminescent compounds, and Igarashi et al. do not explicitly disclose whether compounds of formulae (1-53), (1-55), (1-57), (1-59), (1-60) and (1-69) are red-luminescent, it is the examiner's position that it is reasonable to expect that at least the compounds of formulae (1-53), (1-55), (1-59), (1-60) and (1-69) are red-luminescent since these compounds contain A and B groups within the scope of various dependent claims as noted above. Also, with respect to Igarashi's compound of formula (1-53), this compound is very similar to compound 132 as disclosed in the present specification, differing only in that present compound 132 has a methyl group at "J" whereas the prior art compound has a hydrogen at the position corresponding to "J", and would reasonably be expected to have similar properties to present compound 132.

8. Claims 1, 2, 8-13, 15, 21, 36, 41, 42 and 44-47 are rejected under 35 U.S.C. 102(e) as being anticipated by Kwong et al. (US 2003/0072964 A1).

Kwong's compound 13/compound of formula V is a red-luminescent metal coordination compound represented by present formula 1 which is further represented by present formula 2 which is further represented by present formula 3 in which M is iridium, m is 2, n is 1, A is unsubstituted phenyl, B is unsubstituted isoquinoline and partial structure ML'n is represented by formula (5). Kwong et al. disclose this compound for use as an emissive material in an organic electroluminescent device. For example, see Fig. 2, paragraphs [0002], [0007]-[0027], [0132] and [0179], Table 1, Example 15 and the claims, especially claims 65 and 129.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 2, 7-15, 21, 23-36 and 41-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi et al. (US 2001/0019782 A1) as applied to claims 1, 2, 7-15, 21, 36, 41, 42 and 44-47 above, and for the further reasons set forth below.

In addition to the specific iridium compounds anticipated by Igarashi et al. as set forth in the rejection under 35 U.S.C. 102(e), Igarashi et al. suggest various other compounds within the scope of the present claims. It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make other compounds within the scope of Igarashi's generic formulae and similar to the specific compounds disclosed by Igarashi et al. with the expectation that similar compounds would have similar properties and could be used for the purposes of the prior art. For example, with respect to compounds represented by present formula (8) as defined in claim 23, with claims 24-35 dependent therefrom, Igarashi's specific iridium compounds include compounds in which all three ligands are the same (as in Igarashi's

compound of formula (1-60)), compounds containing one or more phenylisoquinoline ligands (as in Igarashi's compound of formula (1-56)), and compounds containing fluorinated substituents (as in Igarashi's compound of formula (1-61)). Further, with respect to the use of ligands having fluorine or fluorinated substituents, one of ordinary skill in the art would have reasonably expected an iridium compound having three phenylisoquinoline ligands which were substituted with fluorine and/or fluorinated substituents to be suitable for Igarashi's purposes since Igarashi et al. teach that the ligands of the iridium compounds may be substituted with fluorine and/or fluorinated substituents (e.g. see paragraph [0050]).

11. Claims 1, 2, 7-15, 21, 23-36 and 41-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwong et al. (US 2003/0072964 A1) as applied to claims 1, 2, 8-13, 15, 21, 36, 41, 42 and 44-47 above, and for the further reasons set forth below.

In addition to the specific compound anticipated by Kwong et al. as set forth in the rejection under 35 U.S.C. 102(e), Kwong et al. suggest various other compounds within the scope of the present claims. For example, Kwong et al. suggest compounds represented by present formula (3) wherein  $n$  is 0 such as compounds represented by present formula (8) as defined in claim 23, with claims 24-35 dependent therefrom. Such compounds are suggested by Kwong's compound of formula III wherein one or more of  $R^1$ - $R^{10}$  may be a fluorine atom or a fluorinated substituent (e.g. see the first column on page 2 and see claim 1 of the published application).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make various compounds within the scope of Kwong's compound of formula III in order to provide various compounds other than those explicitly disclosed by Kwong et al. for use in an organic electroluminescent device. One of ordinary skill in the art at the time of the invention would have reasonably expected that compounds within the scope of Kwong's compound of formula III having substituents selected from those suggested by Kwong et al. would have properties similar to those of the specific compounds disclosed by Kwong et al. and would be suitable for use in an organic electroluminescent device as taught by Kwong et al.

12. The references made of record and not relied upon are considered pertinent to applicants' disclosure.

In US 2002/0190250 A1, Grushin et al. disclose red-luminescent iridium coordination compounds having phenylisoquinoline ligands substituted with fluorine or fluorinated alkyl or alkoxy groups. These compounds meet the limitations of various of the present claims, including present claim 23. However, the '250 publication is the publication of an application filed after the filing date of PCT/JP01/10487 (the present application being a continuation of PCT/JP01/10487). Grushin's application claims priority of an earlier filed non-provisional U.S. application and two earlier filed provisional applications which have filing dates prior to the filing date of PCT/JP01/10487, but the earlier filed applications do not disclose compounds having phenylisoquinoline ligands (see US 2002/0121638 A1).

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Thompson et al. (US 2002/0034656 A1) suggest the use of phenylisoquinoline and derivatives thereof as ligands in metal coordination compounds for use as light emitting materials in organic electroluminescent devices. For example, see the third formula in Fig. 49 and see paragraph [0183].

13. Miscellaneous:

The seventh line from the end of claim 1 includes the phrase "vitro atom". Presuming "vitro" should read --nitro--, "vitro atom" should be changed to --nitro group-- since "nitro" is a group rather than an atom.

The two occurrences of "nitro atom" in claim 2 should be changed to --nitro group-- since "nitro" is a group rather than an atom.

A comma should be inserted after the second occurrence of "group" in line 4 of claim 9.

14. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (703) 308-4413. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax numbers for Art Unit 1774 are (703) 872-9311 for official after final faxes and (703) 872-9310 or (703) 305-5408 for all other official faxes. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (703) 872-9041.)

MRY  
06/16/03



MARIE YAMNITZKY  
PRIMARY EXAMINER

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